REMARKS

Claims 1-6 and 8-24 remain in the application. Claim 7 has been cancelled.

Applicant thanks the Examiner for withdrawing the finality of the previous office action. Per the Examiner's request, Applicant has attached an English translation of DE-767872 (DE'872) (office action, page 3, lines 16-18).

Rejections Under 35 U.S.C. § 103(a)

Claims 1-6 and 8-24 were rejected under 35 U.S.C. § 103(a) as being obvious over DE'872 in view of *Olsen* (U.S. Pat. No. 4,442,647).

Applicant's claims recite a multi-axis shock and vibration isolator. The office action asserts that figure 1 of DE'872 shows a multi-axis shock and vibration isolator (office action, page 2, lines 7-8). The device shown in figure 1 is not a multi-axis shock and vibration isolator but a spring designed to impart a single axis ("in the direction of the main force") restorative force (DE'872 translation, page 1, paragraph 1 and page 2, last paragraph).

Claims 1, 10 and 21 recite first and second holes being sized and shaped for attenuating vibration at a second frequency along a lateral axis. The office action acknowledges that this feature is not disclosed in DE'872 (office action, page 2, lines 16-18).

The office action asserts that Applicant discloses holes 216 (passageways) in lines 1-3 of paragraph 26 of the disclosure and that it would have been obvious to one skilled in the art modify the shape and size of the holes 216 to obtain the recited feature (office action, page 3, lines 7-14). DE'872 discloses chambers arranged in a honeycomb shape to reinforce a load applied to the individual chamber walls that are subject to compressive or tensile stresses (DE'872 translation, page 2, paragraph 2). These chambers do not provide reinforcement or attenuate vibration at a second frequency along a lateral axis. Therefore, Applicant asserts that it is not obvious to have first and second holes being sized and shaped for attenuating vibration at a second frequency along a lateral axis. Despite the Examiner's contrary assertions, she is in fact alleging obviousness using improper hindsight. Without Applicant's own disclosure serving as a roadmap, it never would have occurred to those having ordinary skill in the art to size and shape first and second holes within an isolator to attenuate vibration at a second frequency along a lateral axis. This feature is not disclosed in DE'872, *Olsen* or the prior art of record making claims 1, 10 and 21 patentable.

Claim 1 and 21 also recites a body made of an elastomeric material. The office action acknowledges that this feature is also not disclosed in DE'872 (office action, page 2, lines 16-18). The office action further asserts that *Olsen* discloses such a material and that it would have been obvious for someone of ordinary skill in the art to have modified the body of DE'872 to be made with an elastomeric material.

DE'872 is directed toward a rigid body and actually teaches away from the use of an elastomeric material. DE'872 asserts that the novelty of its teaching is in the steep elastic characteristic (high spring force) of the invention (DE'872 translation, page 1, paragraph 2). That is, DE'872 discloses that the high spring force is achieved by the use of a honeycomb structure to exploit the arched vault effect allowing the structure to resist a compressive or tensile stress (DE'872 translation, page 2, paragraph 2). DE'872 discloses the construction of the honeycomb using casting and pressing suggesting a durable metallic structure (DE'872 translation, page 2, paragraph 2). The use of an elastomeric material in the DE'872 body would produce a device with a lower spring force, thus reducing the benefit of the honeycomb chambers and contradicting the teaching of casting and pressing of a durable metallic structure. Thus, incorporating the *Olson* elastomeric material with the DE'872 metallic spring is contrary to the teachings of DE'872 and it would not be obvious to someone of ordinary skill in the art to make this combination. Therefore, claims 1 and 21 are patentable over DE'872 in view of *Olson*.

Claim 15 recites a plus signed shaped through hole connecting the first, second, third and fourth holes. Neither DE'872 nor *Olsen* teaches or suggests this limitation, making claim 15 patentable over any combination of DE'872 and *Olsen*.

Claims 2-6, 8-9, 11-14, 16-20 and 22-24 depend from claim 1, 10, 15 and 21, adding structural features that more particularly define the invention and further distinguish over the cited references and the prior art of record. For these reasons, and for the reasons set forth above, claims 2-6, 8-9, 11-14, 16-20 and 22-24 are patentable.

Conclusion

In view of the above amendments and remarks, it is respectfully submitted that all the pending claims are in condition for allowance, and such action is earnestly solicited. If the Examiner believes that a telephone interview will help further the prosecution of this case, he is respectfully requested to contact the undersigned attorney at the listed telephone number.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on April 3, 2006.

By: Lisa Holstein
Lisa Holstein
Signature

Dated: April 3, 2006

Very truly yours,

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Granted on the basis of VO, of May 12, 1943 – RGBI. II., page 150

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THE REICH PATENT OFFICE

PATENT DOCUMENT NO. 767 872

Class 47a, Group 17
Sch 122153 XII/47G

Printed subsequently by the German Patent Office in Munich (§ 20 of the First Law for Modification and Transition of Regulations in the Field of Commercial Law, of July 8, 1949)

Dipl. Ing. Hans Scheftlein, Dessau-Ziebigk is named as the inventor.

Elastic Body

Patented in German Reich on March 16, 1941, in the time period from May 8, 1945 until May 7, 1950, inclusive, not counted toward the duration of the patent (Law v. 15. 7. 51)

The granting of the patent was published on December 31, 1953

The invention is based on an elastic body, which is provided with holes having any shape in the direction of the main force, and which can be used both as a pressure and as a tension elastic body.

The inventor set up for himself the task of providing a similar elastic body, while creating at least partially a steep elastic characteristic in as simple manner as possible.

This task is achieved in accordance with the invention with an elastic body, comprising chambers arranged in the honeycomb shape, which are open on their front sides and whose longitudinal axes pass through the hole.

The formation of the individual chambers can be realized in a great number of ways. It is thus for example possible to form the chambers by cutting them out of a massive body, or to manufacture the entire body by casting, pressing or a similar technique.

[page 2]

A similar type of manufacture is based on the fact that the individual walls of the chambers are manufactured from a thin-walled material, and that the elastic body is assembled from these individual elements. The assembly of the body can be then carried out with a suitable finishing procedure, for example by sintering, welding, soldering, riveting or the like, but also by gluing or the like. For the purposes of special applications, it is also possible to arrange a plurality of similar elastic bodies as loose individual elements on top of each other, that is to say without a fixed connection to each other.

The mode of operation of a similar elastic body is based on the fact that the individual chambers, which are arranged in a honeycomb shape to each other, mutually reinforce each other in the manner of an arched vault when a load is applied so that the individual chamber walls are to a considerable extent subjected to a compressive stress or to a tensile stress. Because unlike known elastic bodies, the present elastic body makes it possible to utilize very advantageously the elastic material, this also leads to a low material cost.

In another embodiment of the invention, a more flat increase of the elastic characteristic is provided in the initial region of the load, from which a steep characteristic is then continued, wherein gaps are created between the individual chambers so that the mutual reinforcement of the individual adjacent chamber by the arched vaults relative to each other occurs only after a certain travel of the spring system.

The drawings illustrate two possible embodiments by way of an example.

Figure 1 represents an embodiment form of the invention by way of an example, wherein a full base body 1 is manufactured, and the chambers 2 are then created therein. The individual rows of the chambers 2 are arranged with a honeycomb shape relative to each other.

Figure 2 shows a developed view of an elastic body, which is made from a tape material, wherein the chambers 2 in the individual rows are formed by the folding of tapes 3. The elastic body is closed on both sides with covering plates. This embodiment makes it possible to realize the characteristic of a folded spring because the adjacent spring walls are not in mutual contact with each other when no load is applied; instead, they are separated by cavities 5. When a load is applied, the chamber walls will first respond mostly by bending, until the arched vault effect results in bridging over of the cavities 5.

PATENT CLAIMS:

1. An elastic body provided with holes in any shape in the direction of the main force, characterized by the fact that it comprises chambers, which are open on their front sides, arranged with the honeycomb shape, mutually reinforcing each other, whose longitudinal axes pass through the hole.

2. The elastic body according to claim 1, characterized by the fact that gaps are provided between the chambers deployed in one row, which enable mutual reinforcement of the chambers after a load has been applied to some extent.

The documents listed below have been taken into consideration to determine the limits of prior art during the granting process:

German patents No. 94 320, 448 817, 453 300, 468 467, 473 060, 626 703;
Swiss patent No. 190 448;
French patents No. 428 963, 512 686, 659 821;
British patents No. 108 937, 137 924, 439 667;
Lehr: Oscillation Technology, Part I, page 57; "Research in the Field of Engineering", 1931, Volume II, page 4;
Journal of the VDI, 1923, page 34; 1930, page 34; 1930, page 1239; 1935, page 917 through 919;
Journal "German Hydroeconomy", 1928, page 178.
Rötscher: "Machine Elements", 1927, Part I, page 345, 378;
Journal for Technical Physics, 1928, pages 404 through 411;
Richter and von Voss: Structural Elements of Fine Mechanics, 1938, page 299;
Dr. Ing. Schoeneich: Screw Safety Mechanisms, 1933, pages 30, 39, 40;
Journal of Automobile Technology, 1933, page 56;
Announcement of the Office for Testing of Materials at the Technical University in Darmstadt (VDI Publishing House), Volume 7, pages 2, 14, 24, 30;
Apparatus Construction (VID Publishing House), 1940, page 21;
Gross and Lehr, "Springs, Their Construction and Calculation", 1938, page 127.

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1 Sheet of Drawings Is Attached

Figure 1

Figure 2